

tic and Gulf coasts, with zero temperatures in the States of the lower Missouri Valley on the morning of the 14th, and a fall in temperature of 20° to 30° in the interior of the Atlantic and east Gulf States by the morning of the 15th. A moderate cold wave overspread the central valleys and the Eastern and Southeastern States during the 26th, 27th, and 28th, attended by frost to the middle and east Gulf coasts and northern Florida.

BOSTON FORECAST DISTRICT.

The month as a whole was less severe than the average February. Marked cold waves occurred on the 3d and 6th, during which the temperature fell almost to zero in the southern portions, and 20° to 36° below zero in interior and northern portions, of New England. The temperature was also very low at the close of the month. Snowfall was light to moderate and occurred chiefly on the 9th and 10th. At the close of the month snow lay only in the woods and on northern hill-sides. From the 26th to 28th gales of great force prevailed, the wind reaching velocities of 40 to 70 miles an hour at coast stations. During this storm several vessels were beached, but without great damage or loss of life; incoming vessels reported that the storm was of unusual severity at sea. Due announcement of the approach of the storm was given by the Weather Bureau, and the press commended the Bureau for the timely warnings to shipping and other interests.—*J. W. Smith, District Forecaster.*

NEW ORLEANS FORECAST DISTRICT.

Timely warnings were issued for all cold waves, and for freezing temperatures and frosts that occurred in the sugar and trucking districts. A pronounced cold wave reached Oklahoma and the northern part of Texas on the 4th, and crossed the district on the 7th. A second cold wave visited the northern portion of the district on the 14th and 15th. Storm warnings were issued on two dates for the Texas coast, and verifying velocities occurred at Galveston.—*I. M. Cline, District Forecaster.*

LOUISVILLE FORECAST DISTRICT.

Six general disturbances of more or less severity affected the weather conditions of Kentucky and Tennessee. Heavy snow on the 4th was followed by a prolonged cold spell, during which temperatures below zero were reported over a large portion of Kentucky. General rains and high winds on the 13th and 14th were followed by a cold wave of short duration. Heavy rains fell on the 20th and 21st, and heavy showers and thunderstorms occurred on the 23d and 24th. On the 26th and 27th showers and some thunderstorms were followed by the heaviest snowfall of the winter. In western and southern Kentucky the snowfall ranged from four to six inches, and in the north-central portion of the State six to twelve inches fell. In Tennessee the precipitation was mostly in the form of rain. Cold-wave warnings were issued the night of the 3d and the morning of the 4th; also the afternoon of the 13th and the morning of the 14th.—*F. J. Walz, District Forecaster.*

CHICAGO FORECAST DISTRICT.

The month, as a whole, was mild over the greater portion of the Middle Western and Northwestern States, and there were no considerable falls of snow or especially severe storms. Advisory messages were sent to open ports on Lake Michigan several times during the month in anticipation of high winds. No casualties of any kind were reported, and, because of the comparative freedom from ice, the traffic on the Lake was greater than is usual during February. With the exception of the 3d, when a marked cold wave appeared in the Northwest and swept thence southward and eastward, no general cold-wave warnings were ordered. On a few occasions cold-wave warnings were ordered for a portion of the district. Warnings hoisted on the 1st in the eastern portion were followed by a marked drop in temperature in that section. On the 13th warnings were ordered for a considerable portion of

the district and a cold wave gradually advanced to its eastern limits, although no very low temperatures occurred.—*H. J. Cox, Professor and District Forecaster.*

DENVER FORECAST DISTRICT.

February was dry, except in Arizona and New Mexico and portions of northern Utah, and mild temperatures prevailed.

On the morning of the 3d loops of a deep northern low pressure area embraced the eastern slope of the Continental Divide, and twelve hours later a depression was central in southeastern Colorado, and a marked rise in pressure, with decided falls in temperature, had occurred in the extreme north. Cold-wave warnings were sent out early in the afternoon to points in Wyoming and eastern Colorado, and at night to eastern New Mexico. The warnings were fully verified in Wyoming and eastern Colorado.—*F. H. Brandenburg, District Forecaster.*

SAN FRANCISCO FORECAST DISTRICT.

The month, as a whole, was one of unsettled weather. A moderate disturbance on the 5th and 6th over the southern portion of California caused timely rain in moderate amounts south of the Tehachapi. On the 10th the first well-marked southeaster appeared on the northern coast of California; ample warning was given of the disturbance. Showery weather continued until the 14th, when a well-marked storm appeared on the coast of Washington, accompanied by high southerly winds and generous rainfall. On the 16th a coast storm moved slowly northward and eastward, and caused but little change in California. On the 20th the pressure fell rapidly on the coast, and a storm of considerable energy swept over the northern portion of California. The observer at Point Reyes Light reported a waterspout about three miles southwest of the station, forming at 4:58 p. m. and disappearing at 5:02 p. m. Heavy snow fell in the mountains during the passage of this storm. On the 26th another marked depression moved eastward, and caused general rain throughout northern California. Frost warnings were ordered for the interior of California on the morning of the 28th.—*A. G. McAdie, Professor and District Forecaster.*

PORTLAND FORECAST DISTRICT.

The month averaged warmer than usual; no cold waves occurred and no cold-wave warnings were issued. Fair weather prevailed in Washington and Oregon from the 1st to the 14th. A stormy period then began, which continued until the close of the month, the highest winds occurring on the 18th, 19th, and 24th. Warnings for all storms were issued.—*E. A. Beals, District Forecaster.*

RIVERS AND FLOODS.

There was but little high water of consequence and no abnormally low water during the month. The heavy and warm rains of the 23d and 24th over northern Illinois caused moderate floods, with danger-line stages, in the Illinois River from the 26th to the 28th, inclusive, for which warnings were issued on the 25th. Rock River was also in flood at the same time, causing considerable damage in Whiteside County, Illinois.

The rivers of eastern South Carolina were slightly above the danger line throughout their lower portions from the 2d to the 4th, inclusive, but no damage was reported.

At the end of the month the Missouri River was open as far northward as Yankton, S. Dak., and the Mississippi as far as Leclaire, Iowa. There was a considerable increase in the quantity of ice during the first three weeks of the month, but the warm weather of the last week made serious inroads upon it. About the middle of the month floating ice was observed in the Mississippi River as far south as New Madrid, Mo. In New England there was a slight increase in the thickness of the ice during the month, but throughout all districts there were from four to twenty inches less ice on the last day of the month than on the corresponding date of the previous year.

The highest and lowest water, mean stage, and monthly range at 291 river stations are given in Table VI. Hydrographs for typical points on seven principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mis-

issippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, Professor of Meteorology.*

CLIMATOLOGICAL SUMMARY.

By Mr. JAMES BERRY, Chief of the Climatological Division.

SUMMARY OF TEMPERATURE AND PRECIPITATION BY SECTIONS, FEBRUARY, 1906.

In the following table are given, for the various sections of the Climatological Service of the Weather Bureau, the average temperature and rainfall, the stations reporting the highest and lowest temperatures with dates of occurrence, the stations reporting greatest and least monthly precipitation, and other data, as indicated by the several headings.

The mean temperatures for each section, the highest and

lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observation. Of course the number of such records is smaller than the total number of stations.

Section.	Temperature—in degrees Fahrenheit.						Precipitation—in inches and hundredths.					
	Section average.	Departure from the normal.	Monthly extremes.				Section average.	Departure from the normal.	Greatest monthly.		Least monthly.	
			Station.	Highest.	Date.	Station.	Lowest.	Date.	Station.	Amount.	Station.	Amount.
Alabama.....	45.6	- 0.7	Lucy.....	75	24	Oneonta.....	11	3	Mobile.....	4.87	Decatur.....	1.15
Arizona.....	51.6	+ 2.5	Selma.....	75	26	St. Michaels.....	14	3	Huachuca Reservoir.....	4.44	Prescott.....	0.13
Arkansas.....	41.8	+ 0.1	3 stations.....	89	3 dates	Dodd City.....	- 7	5	Luxora.....	4.00	Arkansas City.....	0.87
California.....	52.0	+ 3.9	Hanford.....	94	27	Tamarack.....	- 11	25	Monumental.....	22.27	Salton.....	0.00
Colorado.....	29.7	+ 4.9	Lamar.....	82	21	Gunnison.....	- 29	8	Hahos Peak.....	1.63	8 stations.....	T.
Florida.....	58.8	- 1.6	Flamingo.....	85	26	Molino.....	23	1	Jupiter.....	6.44	Eustis.....	0.76
Georgia.....	46.6	+ 0.3	Fleming.....	82	24	Clayton.....	12	3	Glenville.....	4.27	Gainesville.....	0.21
Hawaii.....	68.8†		3 stations.....	88	4 dates	Humuhala, Hawaii.....	- 29	12	Nahiku, Maui.....	9.27	2 stations.....	0.00
Idaho.....	29.6	+ 1.5	Garnet.....	60	18	Soldier.....	- 22	8	Landore.....	5.67	Chesterfield.....	0.46
Illinois.....	28.6	+ 2.4	Cobden.....	76	19	Flora, Windsor.....	- 15	7	Carrollton.....	4.45	Paris.....	0.65
Indiana.....	28.7	- 0.5	Mount Vernon.....	72	23	Bluffton, Kokomo.....	- 19	7	Hammond.....	3.30	Lima.....	0.40
Iowa.....	23.6	+ 4.2	Red Oak.....	66	22	Inwood.....	- 32	10	Mount Pleasant.....	2.91	2 stations.....	0.20
Kansas.....	35.8	+ 5.6	Parusworth.....	81	28	4 stations.....	- 4	5, 9	Pleasanton.....	2.68	Lakin.....	0.02
Kentucky.....	34.7	+ 0.1	Highbridge.....	75	23	Anchorage.....	- 12	7	Marion.....	2.46	Anchorage.....	1.00
Louisiana.....	50.0	- 2.1	Jackson.....	75	24	Georgetown.....	17	9	Abbeville.....	5.88	Robeline.....	0.40
Maryland and Delaware.....	33.2	+ 2.3	Lake Charles.....	84	24, 26	Deer Park, Md.....	- 15	3	Princess Anne, Md.....	6.57	Westernport, Md.....	0.46
Michigan.....	20.8	+ 1.9	3 stations.....	68	14	Humboldt.....	- 36	15	St. James.....	4.52	Iron River.....	0.20
Minnesota.....	13.8	+ 2.6	Coldwater.....	64	21	Bagley.....	- 47	14	Grand Meadows.....	1.42	Mount Iron.....	0.01
Mississippi.....	45.9	- 2.0	Dundee.....	64	23	Watervalley.....	11	6	McNeill.....	4.76	Patmos.....	0.75
Missouri.....	33.7	+ 3.1	Lynd (Gregg).....	81	24, 25	Ironton.....	- 13	7	Sublett.....	4.40	Conception.....	0.85
Montana.....	26.8	+ 6.3	3 stations.....	73	22	Ridgeland.....	- 34	13	Cooke.....	5.20	2 stations.....	T.
Nebraska.....	29.4	+ 6.1	Versailles.....	73	22	Winnebago.....	- 24	15	Dawson.....	2.68	2 stations.....	T.
Nevada.....	36.4	+ 5.0	Warsaw.....	73	22	Clovervalley.....	2	4	Lewers Ranch.....	3.90	Wadsworth.....	0.00
New England*.....	24.5	+ 1.1	Fort Logan.....	70	17	Enosburg Falls, Vt.....	- 36	6	Plymouth, Mass.....	5.33	Thomaston, Me.....	0.90
New Jersey.....	30.9	+ 0.3	St. Pauls.....	70	24	Layton.....	- 12	11	Woodbine.....	3.85	Asbury Park.....	1.77
New Mexico.....	39.2	+ 2.2	Beaver City.....	73	28	Vermejo.....	1	5	Magdalena.....	2.11	3 stations.....	T.
New York.....	22.8	+ 0.9	Culbertson.....	73	28	De Kalb Junction.....	- 33	6	Spier Falls.....	4.00	Atlanta.....	0.25
North Carolina.....	41.5	+ 0.5	Fallon.....	69	26	Faust.....	- 33	6	Washington.....	8.44	Lenoir.....	0.36
North Dakota.....	9.8	+ 2.8	Martins Ranch.....	63	21	Linville.....	2	3	New England.....	0.80	10 stations.....	T.
Ohio.....	27.3	+ 0.2	Boston, Mass.....	63	21	Wishek.....	- 38	14	Ironton.....	2.76	Rocky Ridge.....	0.49
Oklahoma and Indian Territories.....	41.0	+ 3.2	Clayton.....	72	23, 24	Medina.....	- 23	6	Hartshorne, Ind. T.....	3.28	Jefferson, Okla.....	T.
Oregon.....	39.4	+ 2.0	Clarington.....	72	24	Fort Reno, Okla.....	- 5	5	Buckhorn Farm.....	15.77	Vale.....	0.20
Pennsylvania.....	28.0	+ 0.8	3 stations.....	86	24, 25	Burns.....	- 7	5	Girardville.....	3.80	Indiana.....	0.36
Porto Rico.....	73.7		Forest Grove.....	72	10	Granite.....	- 7	3	Rio Blanco.....	5.56	Guanica Central.....	0.05
South Carolina.....	46.0	- 0.7	Derry Station.....	79	24	Franklin.....	- 21	6	Georgetown.....	7.26	Greenville.....	0.96
South Dakota.....	21.4	+ 6.8	Central Aguirre.....	98	11	Saegerstown.....	- 21	6	2 stations.....	1.70	Cherry Creek.....	T.
Tennessee.....	39.0	- 0.4	Walterboro.....	76	20	Aibonito.....	43	15	Andersonville.....	2.90	Franklin (near).....	0.24
Texas.....	48.8	- 0.6	Armour.....	71	19	Liberty.....	12	5	Clarksville.....	5.31	Claude.....	0.02
Utah.....	33.7	+ 3.5	Greenwood.....	71	19	Ipswich.....	- 37	14	Farmington.....	2.56	Green River.....	0.00
Virginia.....	36.7	+ 0.9	Springdale.....	76	20	Union City.....	0	7	Spottsville.....	5.62	Hot Springs.....	0.32
Washington.....	58.6	+ 3.1	Fort Ringgold.....	91	24	Claude.....	5	4, 5	Union City.....	11.74	Wenatchee (near).....	0.59
West Virginia.....	32.4	+ 1.5	Rockville.....	84	27	Fort Duchesne.....	- 15	8	Weston.....	3.34	Durbin.....	0.46
Wisconsin.....	17.2	+ 1.2	Arvonina.....	73	24	Burkes Garden.....	- 2	3	Shullsburg.....	2.18	Downing.....	T.
Wyoming.....	23.8	+ 4.5	Loverings Ranch.....	69	3	Cusick.....	0	5	Upper Geyser Basin, Y. N. P.....	3.71	2 stations.....	T.
			Sutton.....	79	24	Parsons.....	- 11	3				
			Sturgeon Bay.....	55	23	Spencer.....	- 11	28				
			Wheatland.....	72	22	Prentice.....	- 41	5				
						Jackson.....	- 33	7				

* Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

† 48 stations, with an average elevation of 625 feet.

‡ 147 stations.

THE WEATHER OF THE MONTH.

By Mr. WM. B. STOCKMAN, Chief of the Division of Meteorological Records.

The contour of the isobars of the mean sea-level pressure for the month does not materially differ from that of the normal, but in the area of greatest pressure the values are .15 inch, or more, above normal, and over the eastern portion of

the upper and the lower Lake region the positive departures are still greater.

The mean pressure of the month increased over that of January, 1906, except over the Plateau and Pacific regions.